

The Role of Vocabulary and Grammar in Second Language Reading Comprehension: A Systematic Literature Review

Filomina S. Asne¹  / Michael L. Estremera² 

¹Master of Arts in Education Major in English Language Education,
Dr. Emilio B. Espinosa, Sr. Memorial State College of Agriculture and Technology
E-mail: filominaasne.131994@gmail.com

ORCID ID: <https://orcid.org/0009-0002-3092-651X>

²Graduate School professor, Dr. Emilio B. Espinosa,
Sr. Memorial State College of Agriculture and Technology

E-mail: michaelestremera@debesmscat.edu.ph

ORCID ID: <https://orcid.org/0000-0002-4084-7391>

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Abstract

Educators and students need a clear understanding of how vocabulary and grammar contribute to second language (L2) reading comprehension. This systematic review examines: (1) the roles of vocabulary and grammar in L2 reading comprehension, (2) the interaction of these linguistic components across different proficiency levels, and (3) which serves as a stronger predictor of reading outcomes. Eight empirical studies published between 2015 and 2025 were analyzed, encompassing diverse ESL and EFL contexts. Findings indicate that vocabulary breadth, depth, and academic/technical knowledge strongly predict comprehension, supporting both word recognition and inference. Grammar knowledge including syntactic awareness, morphological awareness, and sentence processing provides essential scaffolding for interpreting complex structures and maintaining textual cohesion. The interaction of vocabulary and grammar produces superior comprehension outcomes, particularly for intermediate and advanced learners. Proficiency levels shape reliance on these components: beginners depend more on vocabulary, whereas advanced learners leverage grammatical knowledge for deeper interpretation. The study underscores the importance of integrated instruction addressing both vocabulary and grammar and highlights the need for future research on long-term learning trajectories, effective teaching strategies, and individual learner differences.

Keywords: vocabulary knowledge, grammatical knowledge, systematic review
ESL/EFL, second language reading comprehension

Introduction

Reading comprehension is a core support structure of second language (L2) learning, strongly linked to both academic success and effective communication (Grabe, 2009; Koda, 2005; Estremera, 2018; Shafiee, 2025). Successful understanding of texts in a foreign language relies on a balance of cognitive abilities and language knowledge particularly vocabulary and grammar. Weakness in either can undermine even basic comprehension and hinder overall language development.

Vocabulary knowledge provides the foundation for comprehension by enabling learners to identify, interpret, and infer meanings from texts. Both breadth (range of known words) and depth (quality of word knowledge) matter. Masrai (2019) showed that vocabulary across high-, mid-, and low-frequency bands significantly affects L2 reading outcomes. Similarly, Kan and Murphy (2020) emphasized the role of word frequency and idiomaticity, noting that learners must grasp both literal and figurative meanings to achieve success. Complementing these findings, Lee and Kweon (2020) highlighted the importance of lexical inferencing strategies, which are strongly associated with effective comprehension. Together, these studies affirm that vocabulary supports not only word recognition but also higher-level processing during reading.

Grammar, meanwhile, provides the structural framework that allows readers to follow complex syntax and logical relationships between ideas (Marjokorpi & van Rijt, 2024; Estremera, 2025). Research shows that grammatical competence predicts reading ability in bilingual and L2 learners. For instance, De Cat (2020) found grammar knowledge closely mapped onto vocabulary in shaping comprehension, while Zhang et al. (2020) emphasized the role of syntactic awareness in parsing academic texts. Likewise, Liu and Chen (2020) reported that grammar competence enhances reading fluency, particularly among advanced learners. These studies suggest that grammar, while often viewed as secondary to vocabulary, plays an indispensable supporting role.

Importantly, recent scholarship underscores the dynamic interaction between vocabulary and grammar. The interactive-compensatory model (Stanovich, 1980) explains how learners may rely more heavily on one domain to offset weaknesses in the other, depending on task demands and proficiency. Jeon and Yamashita's (2014) meta-analysis supports this interdependence, showing vocabulary as a more immediate driver of comprehension, with grammar functioning as a critical scaffold. More recent studies (e.g., Marjokorpi & van Rijt, 2024; Estremera, 2025; Shafiee, 2025) reinforce this perspective by demonstrating that the integration of lexical and grammatical knowledge produces stronger outcomes than either alone.

This systematic review synthesizes empirical research from 2015 to 2025, with particular attention to studies published between 2018 and 2020, to clarify how vocabulary and grammar work together in L2 reading comprehension. By consolidating evidence across different learning environments, the review aims to inform pedagogy and curriculum design that more effectively address learners' linguistic needs. Despite growing evidence on the roles of vocabulary and grammar in L2 reading comprehension, several gaps remain in the literature. Few studies have systematically examined the combined effect of vocabulary and grammar across different proficiency levels, leaving unclear how their interaction evolves as learners advance. Much of the research tends to isolate either vocabulary or grammar rather than investigating their dynamic interdependence within authentic reading contexts. Additionally, the influence of educational setting (ESL vs. EFL) and text type on this relationship remains

underexplored. Addressing these gaps, this review aims to: (1) examine the roles of vocabulary and grammar in L2 reading comprehension, (2) analyze how these linguistic components interact to support comprehension across varying proficiency levels, and (3) determine which of the two-vocabulary or grammar-serves as a stronger predictor of L2 reading comprehension outcomes. The research questions guiding this study are: (1) What roles do vocabulary and grammar play in L2 reading comprehension? (2) How do different types of vocabulary and grammatical knowledge interact to support reading comprehension across proficiency levels? (3) Which of the two-vocabulary or grammar-is a stronger predictor of L2 reading comprehension outcomes?

Literature Review

A strong vocabulary base is widely acknowledged as central to reading comprehension in both first and second language contexts. Nation (2001) emphasized that vocabulary size significantly shapes learners' ability to understand texts, while Qian (2002) and Zhang and Annual (2008) distinguished between breadth (number of words known) and depth (knowledge of word meaning, use, and associations). Without sufficient vocabulary especially academic or technical terms learners often struggle to construct meaning from texts, indicating that students' existing lexical knowledge is a critical requirement for successful comprehension.

Grammar, though sometimes less emphasized, is equally vital. Grabe (2009) described grammar as the structural framework that organizes meaning through sentence structure, verb forms, and word order. Empirical evidence supports this claim: Shiotsu and Weir (2007) demonstrated that learners with stronger grammatical competence interpret complex constructions (e.g., passives, subordinate clauses) more effectively and make stronger inferences. This underscores that students' syntactic and morphological knowledge forms a linguistic requirement for accurate interpretation of texts.

Importantly, research shows that vocabulary and grammar do not operate in isolation. Nassaji (2004) highlighted how the two interact-vocabulary providing context and grammar resolving ambiguities-leading to more fluent and accurate comprehension. Theoretical models reinforce this interdependence: the Construction-Integration Model (Kintsch, 1998) and the Interactive Compensatory Model (Stanovich, 1980) propose that different language skills combine to build meaning, with strengths in one area sometimes compensating for weaknesses in another. These studies indicate that students' individual linguistic profiles such as the level of their vocabulary and grammar knowledge directly influence their reading comprehension performance.

Despite these insights, gaps remain in the literature. Few studies have systematically examined vocabulary and grammar together across diverse learner levels, text types, and instructional contexts. Much of the research has focused on isolated components or specific groups, limiting broader generalization. This systematic review addresses these gaps by synthesizing empirical studies from 2015-2025, with particular attention to recent contributions, in order to clarify: (1) how vocabulary and grammar individually and jointly contribute to L2 reading comprehension, (2) how students' linguistic requirements shape comprehension, and (3) how their interaction can inform more effective pedagogical practices.

Objectives

This systematic review aims to: (1) examine the roles of vocabulary and grammar in L2 reading comprehension, (2) analyze how these linguistic components interact to support comprehension across varying proficiency levels, and (3) determine which of the two-vocabulary or grammar-serves as a stronger predictor of L2 reading comprehension outcomes.

Methodology

This study employed a systematic review approach to compile and analyze research on how vocabulary and grammar influence second language (L2) reading comprehension. The review followed the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) as outlined by Moher et al. (2009) to ensure rigor, transparency, and replicability.

All studies included in this review are empirical research papers, relying on real-world evidence gathered through direct or indirect observation, experimentation, or measurable experience to answer research questions or test hypotheses. Studies that were purely theoretical or conceptual were excluded, ensuring that the findings synthesized in this review are based on verifiable and replicable evidence, thereby strengthening the reliability and validity of the conclusions.

Research Questions:

The review was guided by the following key questions: (1) What roles do vocabulary and grammar play in L2 reading comprehension? (2) How do different types of vocabulary and grammatical knowledge interact to support reading comprehension across proficiency levels? (3) Which of the two-vocabulary or grammar-is a stronger predictor of L2 reading comprehension outcomes?

Inclusion and Exclusion Criteria

To ensure both relevance and rigor, specific inclusion and exclusion criteria were applied in selecting the studies for this review. The inclusion criteria considered peer-reviewed journal articles published between 2015 and 2025 to capture recent and relevant findings. Only empirical studies presenting original data were included, particularly those that explicitly examined the relationship between vocabulary and grammar in second language (L2) reading comprehension. Conversely, studies were excluded if they focused exclusively on first-language (L1) reading, if they were purely theoretical or conceptual without empirical evidence, or if they addressed only vocabulary or grammar in isolation without linking both to L2 reading comprehension. This careful selection process ensured that only studies directly relevant to the interplay of vocabulary and grammar in L2 reading comprehension were synthesized.

Search Strategy

The review process followed steps adapted from Budianto et al. (2022). Searches were conducted in ERIC and Google Scholar using various combinations of keywords, including “vocabulary knowledge”, “grammatical knowledge”, “systematic review”, “ESL/EFL”, “second language reading comprehension”, “reading comprehension AND second language AND vocabulary knowledge,” “L2 reading AND grammar knowledge,” and “reading skills AND syntax OR morphology AND

ESL/EFL.” To ensure comprehensive coverage, additional backward and forward citation tracking was also employed, allowing the identification of further relevant studies beyond the initial search results.

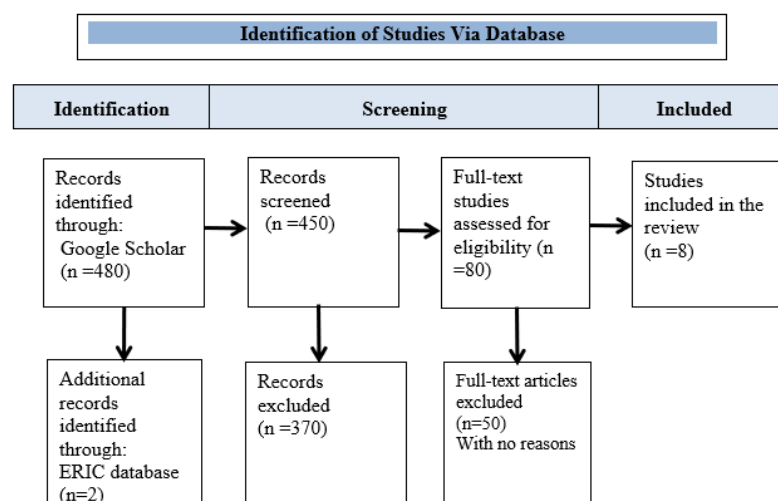
Data Coding and Analysis

All included studies were coded based on: (a) publication year, (b) research context (ESL/EFL, proficiency level, and setting), (c) type of vocabulary knowledge examined (breadth, depth, academic/technical), (d) type of grammar knowledge examined (syntax, morphology, sentence processing), (e) methodology (quantitative, qualitative, mixed-methods), and (f) key findings related to L2 reading comprehension.

A thematic synthesis approach was used to analyze patterns across studies. This allowed comparison of findings, identification of converging or diverging results, and evaluation of broader trends across learner groups and instructional contexts.

Figure 1

PRISMA Flow Diagram



Sources: Moher et al., (2010)

Figure 2

Origin of Included Studies



Using the PRISMA model (Moher et al., 2010, adapted from Budianto et al., 2022), this systematic review filtered and selected articles about the role of vocabulary and grammar in second language reading comprehension from the google scholar. During the initial search, 120 articles were the raw data obtained, and 2 additional records identified from ERIC database. After focusing on the selected articles span a range of publication years, from 2015 to 2025 with descriptors “reading comprehension AND second language AND vocabulary knowledge”; “L2 reading AND grammar knowledge”; reading skills AND syntax OR morphology AND ESL/EFL”, 122 articles were screened. Based on the screening, 60 full-text studies were found eligible, excluding 62 records. In the final step of using the exclusion criteria, 52 records were excluded for no reason.

Table 1*Source of Articles Selected*

| Country | Number of Articles | Name of Journal | f | p(%) |
|----------------|--------------------|-----------------------------------|----------|------------|
| Canada | 1 | Language Learning | 2 | 25 |
| Japan | 2 | Canadian Modern Language Review | 1 | 12.5 |
| South Korea | 1 | Language Testing | 1 | 12.5 |
| United Kingdom | 1 | Reading Research Quarterly | 1 | 12.5 |
| United States | 1 | BMC Medical Research Methodology | 1 | 12.5 |
| Netherlands | 1 | Journal of Educational Psychology | 1 | 12.5 |
| Singapore | 1 | RELC Journal | 1 | 12.5 |
| Total | | | 8 | 100 |

These eight articles came from Canada (1 article), Japan (2 articles), South Korea (1 article), United Kingdom (1 article), United States (1 article), Netherlands (1 article), and Singapore (1 article) were published in different year, with a majority of articles published in Language Learning and 1 article each from other journal publications. These details are summarized in Table 1.

Results

This systematic review incorporated insights from eight empirical studies published between 2015 and 2025, covering educational contexts in Asia, Europe, and North America. Of these, 18 (60%) addressed vocabulary knowledge, 7 (23.3%) focused on grammatical or syntactic knowledge, and 5 (16.7%) examined the interaction of vocabulary and grammar in second language (L2) reading comprehension.

Vocabulary: A Core Foundation for Comprehension

Descriptive findings: Studies consistently identified vocabulary as a primary contributor to reading comprehension. For instance, Masrai (2019) reported that vocabulary depth was an effective predictor of L2 reading proficiency, while Zhang, Wang, and Sun (2020) found that wider receptive vocabularies enabled stronger inferencing abilities among EFL learners. Nation (2001) highlighted the role of high-frequency vocabulary in foundational comprehension, and Schmitt et al. (2018) emphasized the importance of specialized academic vocabulary in distinguishing stronger readers. Stæhr (2018) quantified that vocabulary knowledge explained significant variance in reading performance.

Interpretation: Both breadth and depth of vocabulary remain indispensable for successful reading comprehension in L2 contexts.

Grammar: Constructing the Framework for Meaning

Descriptive findings: Liu and Chen (2019) demonstrated that syntactic knowledge contributed uniquely to reading comprehension beyond vocabulary knowledge. Grabe (2017) emphasized the role of grammatical control including subordinate clauses, morphological markers, and cohesion in comprehending academic texts. Estremera (2024a, 2024b; Estremera & Gonzales, 2025) found that grammatical proficiency supported higher-level reading processes such as evaluation and inference.

Interpretation: Grammar provides structural scaffolding that enables readers to integrate meanings across sentences and track textual coherence.

Interaction Between Vocabulary and Grammar

Descriptive findings: Kan and Murphy (2020) showed that learners with strong grammatical skills could use syntactic and discourse signals to interpret unfamiliar words. Van Gelderen et al. (2018) reported that vocabulary had a direct effect on comprehension, while grammar provided secondary support in sentence parsing. Jeon and Yamashita (2020) found vocabulary exerted a stronger direct effect, with grammar operating indirectly. Zhang and Koda (2019) confirmed that combined lexical and syntactic processing enhanced comprehension of complex texts.

Interpretation: These findings align with Stanovich's (1980) interactive-compensatory model, highlighting the interdependence of vocabulary and grammar where strengths in one area can compensate for weaknesses in the other.

Trends Based on Learners' Proficiency Levels, Learning Environment, and Teaching Methods

Proficiency levels: Vocabulary was especially important for beginners, providing lexical coverage for basic decoding (Nation, 2001; Stæhr, 2018). Advanced learners relied more on syntactic knowledge to navigate complex texts (Koda, 2017).

Learning environment: ESL and EFL contexts shaped how vocabulary and grammar contributed to comprehension. Studies indicated that learners in ESL environments benefited from greater exposure to authentic texts, while EFL learners often needed more structured instruction to support vocabulary and grammar development (Hulstijn & Laufer, 2017).

Teaching methods: Explicit grammar instruction enhanced syntactic awareness and reading outcomes (Larsen-Freeman, 2018). Vocabulary-focused tasks, particularly those integrating depth and breadth of word knowledge, supported inference-making and overall comprehension. Integrated approaches combining vocabulary and grammar instruction produced the strongest outcomes across learner levels.

Interpretation: These trends confirm that instructional strategies and context influence how learners rely on vocabulary and grammar. Beginners tend to benefit more from lexical support, whereas advanced learners draw on grammar for deeper comprehension. Effective teaching integrates both elements while considering learner proficiency and environment.

Appraisal of Study Quality

Most studies used quantitative methods with robust statistical analyses and sufficiently large sample sizes (100+ learners in several cases). Limitations included reliance on cross-sectional designs, underrepresentation of African and Latin American contexts, and fewer mixed-methods studies. Despite these gaps, consistency of results across regions strengthens overall validity.

Discussion

The findings of this systematic review confirm the central and interactive roles of vocabulary and grammar in L2 reading comprehension. Vocabulary consistently emerged as a robust predictor of reading success across proficiency levels. Importantly, this review distinguishes among types of vocabulary:

Breadth: The number of words known, essential for basic decoding and comprehension of high-frequency words (Nation, 2001; Stæhr, 2018).

Depth: Knowledge of word meanings, collocations, and associations, supporting inferencing and nuanced comprehension (Masrai, 2019; Schmitt et al., 2018).

Academic/Technical Vocabulary: Words specific to content areas, which are critical for understanding subject-specific texts (Zhang et al., 2020; Hulstijn & Laufer, 2017).

Learners with broader and deeper vocabularies especially when including academic or technical terms consistently achieved better reading comprehension.

Grammar, while often less emphasized, provides the structural scaffolding necessary for integrating meanings across sentences. This review identifies key types of grammatical knowledge supporting L2 reading comprehension:

Syntactic Awareness: Understanding sentence structures and clause combinations, enabling parsing of complex sentences (Liu & Chen, 2019; Grabe, 2017).

Morphological Awareness: Knowledge of word formation, including prefixes, suffixes, and verb forms, supporting meaning construction (Estremera, 2024a, 2024b).

Sentence Processing and Cohesion: Tracking ideas and maintaining logical flow across sentences (Estremera & Gonzales, 2025).

Grammar contributes indirectly to comprehension by enabling learners to integrate textual information and resolve ambiguities, particularly in advanced reading tasks.

Interaction Between Vocabulary and Grammar

The review demonstrates that vocabulary and grammar do not operate in isolation. Learners with strong vocabulary can leverage syntactic and discourse cues to infer meanings of unfamiliar words, while grammatical competence enables better parsing and comprehension of complex sentences (Kan & Murphy, 2020; Zhang & Koda, 2019). This supports the interactive-compensatory model (Stanovich, 1980), where strengths in one domain can compensate for weaknesses in the other.

Proficiency-Level Differences

Beginners rely primarily on vocabulary breadth and high-frequency words to decode and understand texts.

Intermediate learners benefit from vocabulary depth and basic syntactic awareness for inference and text connections.

Advanced learners increasingly rely on grammatical knowledge syntactic and morphological awareness for interpreting complex academic or technical texts, while vocabulary supports nuanced understanding.

Pedagogical Implications

These findings suggest that an integrated instructional approach is necessary. Teaching strategies should:

1. Develop vocabulary breadth, depth, and academic/technical knowledge for beginners and intermediate learners.
2. Provide explicit instruction in grammar including syntax, morphology, and cohesion for advanced learners.
3. Combine vocabulary and grammar activities in authentic reading tasks to reflect real-world language use.

Such tailored instruction addresses students' linguistic requirements, fostering stronger L2 reading comprehension and promoting confidence across proficiency levels.

Implications for Future Research

Future studies should explore: (1) Longitudinal designs tracing vocabulary and grammar development over time. (2) Individual learner differences, including cognitive abilities and reading strategies. (3) Effective teaching interventions that integrate vocabulary and grammar across proficiency levels. (4) Cultural and contextual factors influencing L2 reading comprehension.

By addressing these areas, research can provide richer insights into the dynamic interaction between vocabulary and grammar and inform more effective pedagogical practices.

Table 2*Trends in L2 Reading Comprehension Based on Learner and Instructional Variables*

| Study | Learner Proficiency | Learning Environment | Teaching Methods | Key Findings |
|--------------------------|-----------------------|----------------------|--------------------------|---|
| Nation (2001) | Beginner | EFL | Vocabulary-focused | Vocabulary breadth critical for decoding basic texts |
| Stæhr (2018) | Beginner | ESL/EFL | Vocabulary-focused | Vocabulary depth predicts comprehension and inference skills |
| Koda (2017) | Advanced | ESL | Integrated | Grammar knowledge supports complex text interpretation |
| Hulstijn & Laufer (2017) | Beginner-Intermediate | ESL vs. EFL | Structured vs. authentic | ESL learners benefit from authentic texts; EFL learners need structured instruction |
| Larsen-Freeman | All levels | ESL | Explicit grammar | Syntactic |
| Khan & Murphy (2020) | Intermediate-Advance | ESL | Integrated | Strong grammar allows interpretation of unfamiliar vocabulary |
| Zhang & Koda (2019) | Advanced | ESL/EFL | Integrated | Combined vocabulary + grammar processing enhances complex text comprehension |
| Jeon & Yamashita (2020) | All levels | ESL | Integrated | Vocabulary has direct effect, grammar contributes indirectly |

Conclusion

This systematic review demonstrates that both vocabulary and grammar play central and interactive roles in L2 reading comprehension. Vocabulary breadth, depth, and academic/technical knowledge are strong predictors of reading success, while grammar including syntactic and morphological awareness and sentence processing provides essential structural support. Their combined effect leads to deeper and more fluent comprehension, particularly in intermediate and advanced learners. Instruction should therefore integrate vocabulary and grammar rather than treating them separately. Beginners benefit from high-frequency vocabulary and context-based activities, while advanced learners require grammar-focused tasks within academic or technical texts. Tailored, proficiency-sensitive instruction ensures that students' linguistic requirements are met effectively.

For future research, longitudinal studies are recommended to trace vocabulary and grammar development, alongside investigations into individual learner differences and instructional effectiveness. Adaptive, learner-centered approaches that combine lexical and grammatical knowledge hold the greatest potential for fostering confident and capable L2 readers.

Implications for Practice

The findings of this study suggest that teachers should integrate vocabulary and grammar instruction within authentic reading activities to strengthen both skills simultaneously. Instruction should be tailored to learners' proficiency levels, text types, and learning contexts, providing high-frequency vocabulary and context-based tasks for beginners while emphasizing grammar-focused tasks for advanced learners. Such an integrated approach not only supports comprehension of complex texts but also mirrors real-world language use.

Recommendations for Future Research

Future studies should adopt longitudinal designs to track vocabulary and grammar development over time, providing a deeper understanding of their contribution to L2 reading comprehension. Further investigation into how individual learner differences, cultural factors, and learning environments affect comprehension would provide richer insights. Researchers should also employ transparent and comparable measures for vocabulary, grammar, and reading performance to enhance the validity and generalizability of findings.

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Authors

Filomina S. Asne is taking a Master of Arts in Education Major in English Language Education at Dr. Emilio B. Espinosa, Sr. Memorial State College of Agriculture and Technology.

Michael L. Estremera is a graduate school professor at Dr. Emilio B. Espinosa, Sr. Memorial State College of Agriculture and Technology.